

REMARKS

This Reply and Amendment is intended to be fully responsive to the Office Action dated April 2, 2003. Claims 1-47 were pending in the Application. The Examiner imposed a restriction requirement concerning claims 1-32 and 33-47. In a telephone interview on January 13, 2003, applicant chose to prosecute Claims 1-32 with traverse. Claims 33-47 are withdrawn from further consideration. Claims 1-32 stand rejected. Claims 1-4, 7, 9-12, 14, 15, 21, and 24-29 have been amended. Claims 48-50 have been added. Claims 1-32 and 48-50 are now pending in this Application.

Telephone Interview

The Applicant thanks the Examiner for the telephonic interview on June 19, 2003 and the Interview Summary mailed on June 25, 2003. During the Interview, the Applicant and the Examiner discussed Claims 1 and 27 and U.S. Patent No. 5,895,624 (Reece et al.), U.S. Patent No. 6,284,183 (Roys et al.), and U.S. Patent No. 6,394,020 (Belyeu). The Applicant stated that a response would be filed in view of the amendment suggestions by the Examiner. No agreement was reached during the Interview.

Election/Restrictions

In Section 4 of the Office Action, the Examiner requested the affirmation of a telephone election made on January 13, 2003. The Applicant affirms the election of Group I, Claims 1-32.

Claim Rejections – 35 U.S.C. § 112 ¶ 2

In Section 6 of the Office Action, the Examiner rejected Claims 1-32 under 35 U.S.C. § 112 ¶ 2 as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention.

The Examiner stated that "it is unclear whether the first exterior surface refers to the paint layer or the bonding layer." Claim 1 has been amended to clarify that the "first exterior surface" refers to the bonding layer.

The Examiner stated that:

Regarding claims 2, 3, 28, and 29, the claims appear to indicate the sheet shrinks 40-90% of its original length prior to joining. However, the specification appears to suggest that the joining occurs after the sheet has shrunk 40-90% of the total amount of shrinkage, not of its total length. For the Purposes of examination, it is assumed to mean the sheet has shrunk 40-90% of its total shrinkage rather than its total length.

Claims 2, 3, 28, and 29 have been amended to clarify that the percentages relate to the total amount of shrinkage, not total length.

The Examiner stated that:

Regarding claims 7-10 and 26, it is unclear which surface meant by the first exterior surface, as claim 1 indicates the first exterior surface is on the bonding layer attached to the paint layer while claim 7 indicates the first exterior surface refers to the extruded sheet. For the purposes of examination, it is assumed that the second exterior surface is intended to be at a temperature lower than the extrusion temperature rather than that the first exterior surface is intended to be at a temperature lower than the extrusion temperature.

Claims 7-10 and 26 have been amended to recite that the second exterior surface is below the extrusion temperature.

The Examiner stated that:

Regarding claims 12, 14, and 15, while the claims require either a covalent adhesive or a cross-linking adhesive combined with a polyolefin, the specification describes the adhesive as a chlorinated polyolefin (CPO). Chlorinated polyolefins are polyolefins with chlorine substituted into the molecule itself. The definition of a CPO as an adhesive with a polyolefin is repugnant to those in the art as a CPO has a specific defined chemical structure, namely a polyolefin with some of the substituent hydrogens replaced by chlorine.

The Examiner appears to be reading in a limitation to the claims from the specification (i.e., that the adhesive is a chlorinated polyolefin or CPO), which is improper. However, Claims 12, 14, and 15 have been amended to clarify the claimed invention.

The Examiner stated that:

Regarding claim 21, it is unclear what compound is meant by PVDF. It is suggested PVDF be replaced by the compound name.

Claim 21 has been amended to replace "PVDF" with its compound name (polyvinylidene fluoride).

The Examiner stated that:

Claims 24 and 25 recite the limitation "the plurality of shapes" in line 1. There is insufficient antecedent basis for this limitation in the claim. It is assumed this claim is intended to be dependent from claim 23.

Claims 24 and 25 have been amended to depend from Claim 23.

Claims 2, 3, 7-10, 14, 15, 21, 24, 25, 26, 28 and 29 have been amended to particularly point out and distinctly claim the subject matter in compliance with 35 U.S.C. § 112 ¶ 2. The Applicant requests withdrawal of the rejection of Claims 1-32 under 35 U.S.C. § 112 ¶ 2.

Claim Rejections – 35 U.S.C. § 102

In Section 9 of the Office Action, the Examiner rejected Claims 1-3, 7, 8, 19, 20, 27-29 and 32 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,895,624 titled "METHOD AND APPARATUS FOR FORMING THICK WALL PLASTIC SHEETS HAVING FORMABLE DECORATIVE LAYERS" issued on April 20, 1999 to Reece et al. ("Reece et al.").

The Examiner stated that Reece et al. discloses:

forming a three-dimensional structure by extruding a polymer sheet up to 0.3 inches thick, joining a laminate comprising a paint film and adhesive to the sheet, and thermoforming the composite. (Col. 1, ll. 43-53; Col. 1, ll. 10-33)

However, the Examiner acknowledged that Reece et al. does not specifically disclose:

joining the laminate to the sheet after 90% of the shrinkage has occurred, shrinkage takes place in the first few hours after extrusion.

Claim 1 (as amended) is in independent form and recites a “method for forming a three-dimensional polymeric structure” comprising, in combination with other elements, “providing a thermoplastic material for use as an adhesive between the bonding layer and the structural sheet,” “cooling the structural sheet from the extrusion temperature to a predetermined temperature,” and “joining the first exterior surface to the second exterior surface to form a thermoformable sheet by using heat from the structural sheet at the predetermined temperature to activate adhesive properties of the thermoplastic material.” Claims 2, 3, 7, 8, 19 and 20, depend from independent Claim 1.

Claim 27 (as amended) is in independent form and recites a “method for forming a thermoformable panel” comprising, in combination with other elements, “providing a thermoplastic material for use as an adhesive between the bonding layer and the structural sheet,” “cooling the structural sheet from the extrusion temperature to a predetermined temperature,” and “joining the first exterior surface to the second exterior surface to form a thermoformable panel by using heat from the structural sheet at the predetermined temperature to activate adhesive properties of the thermoplastic material.” Claims 28, 29, and 32 depend from independent Claim 27.

Reece et al. is directed to a “method and apparatus for forming thick wall plastic sheets having formable decorative film layers” including “providing a thick wall plastic sheet at least partially laminated with a stretchable decorative film”; “heating the laminated sheet to a suitable working temperature”; “forming the preheated laminated sheet to a desired contour and surface finish of the decorative film” (see col. 1, lines 39-49; Abstract; and Figures 17 and 18).

Reece et al. does not identically disclose a “method for forming a three-dimensional polymeric structure” comprising, among other elements, “providing a thermoplastic material for use as an adhesive between the bonding layer and the structural sheet,” “cooling the structural sheet from the extrusion temperature to a predetermined temperature,” and “joining the first exterior surface to the second exterior surface to form a thermoformable sheet by using heat from the structural sheet at the predetermined temperature to activate adhesive properties of the thermoplastic material” as recited in independent Claim 1 (as amended). The rejection of Claim 1 (as amended) over Reece et al. is improper. Claim 1 (as amended) is patentable over Reece et al.

Reece et al. does not identically disclose a “method for forming a thermoformable panel” comprising, among other elements, “providing a thermoplastic material for use as an adhesive between the bonding layer and the structural sheet,” “cooling the structural sheet from the extrusion temperature to a predetermined temperature,” and “joining the first exterior surface to the second exterior surface to form a thermoformable panel by using heat from the structural sheet at the predetermined temperature to activate adhesive properties of the thermoplastic material” as recited in independent Claim 27 (as amended). The rejection of Claim 27 (as amended) over Reece et al. is improper. Claim 27 (as amended) is patentable over Reece et al.

Dependent Claims 2, 3, 7, 8, 19, 20, 28-29, and 32, which depend from independent Claim 1 (as amended) or Claim 27 (as amended), are also patentable. See 35 U.S.C. § 112 ¶ 4.

Applicant respectfully requests withdrawal of the rejection of Claims 1-3, 7, 8, 19, 20, 27-29, and 32 under 35 U.S.C. § 102(b).

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In Section 10 of the Office Action, the Examiner rejected Claims 1, 4, 5, 7, 8, 21, 27, and 32 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,284,183 titled "THICK SHEET LAMINATING PROCESS FOR MAKING EXTERIOR AUTOMOTIVE BODY PANELS" issued on September 4, 2001 to Roys et al. ("Roys et al."). In Section 11 of the Office Action the Examiner rejected Claims 6, 11-15, and 30 as being anticipated by Roys et al.

The Examiner stated that Roys et al. discloses:

forming a three-dimensional structure by extruding a polymer sheet 0.25 inches thick, joining a laminate comprising a paint film bonded to a substrate via an adhesive to the sheet, and thermoforming the composite. (Col. 2, ll. 40-52; Col. 3, ll. 1-2; Col. 5, ll. 15-19)

The Examiner stated that Roys et al. discloses:

using a chlorinated polyolefin to bond the paint film to the sheet. (Col. 11, ll. 24-29) According to the admitted prior art, such adhesives are covalent crosslinking adhesives with activation temperatures of approximately 270F. [0034]

Claim 1 (as amended) is in independent form and recites a "method for forming a three-dimensional polymeric structure" comprising, in combination with other elements, "providing a thermoplastic material for use as an adhesive between the bonding layer and the structural sheet," "cooling the structural sheet from the extrusion temperature to a predetermined temperature," and "joining the first exterior surface to the second exterior surface to form a thermoformable sheet by using heat from the structural sheet at the predetermined temperature to activate adhesive properties of the thermoplastic material." Claims 4, 5-8, 11-15, and 21 depend from independent Claim 1.

Claim 27 (as amended) is in independent form and recites a "method for forming a thermoformable panel" comprising, in combination with other elements, "providing a thermoplastic material for use as an adhesive between the bonding layer and the structural

sheet,” “cooling the structural sheet from the extrusion temperature to a predetermined temperature,” and “joining the first exterior surface to the second exterior surface to form a thermoformable panel by using heat from the structural sheet at the predetermined temperature to activate adhesive properties of the thermoplastic material.” Claims 30 and 32 depend from independent Claim 27.

Roys et al. is directed to a “thick sheet laminating process for making exterior automotive body panels” including a backing sheet wherein a dry paint transfer film is laminated to a relatively the backing sheet, which is then laminated to a relatively thick thermoformable substrate sheet (see Abstract).

Roys et al. does not identically disclose a “method for forming a three-dimensional polymeric structure” comprising, among other elements, “providing a thermoplastic material for use as an adhesive between the bonding layer and the structural sheet,” “cooling the structural sheet from the extrusion temperature to a predetermined temperature,” and “joining the first exterior surface to the second exterior surface to form a thermoformable sheet by using heat from the structural sheet at the predetermined temperature to activate adhesive properties of the thermoplastic material” as recited in independent Claim 1 (as amended). The rejection of Claim 1 (as amended) over Roys et al. is improper. Claim 1 (as amended) is patentable over Roys et al.

Roys et al. does not identically disclose a “method for forming a thermoformable panel” comprising, among other elements, “providing a thermoplastic material for use as an adhesive between the bonding layer and the structural sheet,” “cooling the structural sheet from the extrusion temperature to a predetermined temperature,” and “joining the first exterior surface to the second exterior surface to form a thermoformable panel by using heat from the structural sheet at the predetermined temperature to activate adhesive properties of the thermoplastic

material" as recited in independent Claim 27 (as amended). The rejection of Claim 27 (as amended) over Roys et al. is improper. Claim 27 (as amended) is patentable over Roys et al.

Dependent Claims 4, 5-8, 11-15, 21, 30 and 32, which depend from independent Claim 1 (as amended) or Claim 27 (as amended), are also patentable. See 35 U.S.C. § 112 ¶ 4.

Applicant respectfully requests withdrawal of the rejection of Claims 1, 4, 5-8, 11-15, 21, 30 and 32 under 35 U.S.C. § 102(e)

* *

Claim Rejections – 35 U.S.C. § 103(a)

In Section 13 of the Office Action the Examiner rejected Claims 16, 17, 22-25 and 31 under 35 U.S.C. § 103(a) as being unpatentable over Reece et al., a single reference.

The Examiner stated that Reece et al. discloses that:

the paint film and adhesive layer being 0.0015 inches thick, the reference admits the thickness is only exemplary. (Col. 2, ll. 35-36) One in the art would appreciate that other thicknesses such as 0.2 mils could be used when it was desired to use less paint. Absent unexpected results, the thickness is considered obvious.

In regards to Claims 22-25, the Examiner stated that:

while the reference only discloses the paint layer may have pigment, one in the art would appreciate that it is well-known to form paint films with a variety of designs ranging from dots to camouflage dependent on the final end product.

In Section 14 of the Office Action the Examiner rejected Claims 9, 10, and 26 under 35 U.S.C. § 103(a) as being unpatentable over Roys et al., a single reference.

The Examiner acknowledged that Roys et al. "does not disclose the temperature of the sheet being below 190F when it is bonded to the laminate." However, the Examiner stated that Roys et al. "does disclose that the temperatures can be adjusted to ensure the optical clarity of the paint film." The Examiner concluded that:

One in the art would appreciate that the temperature used would depend on the paint composition used as different paints would retain their optical clarity at different temperatures and would bond the paint film to the sheet at different temperatures dependent on the paint composition.

In Section 15 of the Office Action, the Examiner rejected Claim 18 under 35 U.S.C. 103(a) as being unpatentable over Reece et al. and further in view of U.S. Patent No. 6,394,020, titled "TRANSPARENT KAYAK/CANOE HULL", issued on May 28, 2002 to Belyeu ("Belyeu"), a single reference.

The Examiner stated that Reece et al. "discloses using the products for panels and other components for vehicles and other uses." However, the Examiner acknowledged that Reece et al. "does not disclose using the process to form a canoe." The Examiner stated that Belyeu "discloses thermoforming a polymeric sheet into a canoe." The Examiner concluded that:

[I]t would have been obvious to one of ordinary skill in the art at the time the invention was made to use the process of [Reece et al.] to form a canoe since [Reece et al.] discloses the product can be used as portions of a vehicle and a canoe is a vehicle and since [Belyeu] discloses it is known to thermoform a canoe and that thermoformed canoes are less likely to break or collapse around the paddler.

Claim 1 (as amended) is in independent form and recites a "method for forming a three-dimensional polymeric structure" comprising, in combination with other elements, "providing a thermoplastic material for use as an adhesive between the bonding layer and the structural sheet," "cooling the structural sheet from the extrusion temperature to a predetermined temperature," and "joining the first exterior surface to the second exterior surface to form a thermoformable sheet by using heat from the structural sheet at the predetermined temperature to activate adhesive properties of the thermoplastic material." Claims 9, 10, 16-18, and 22-26 depend from independent Claim 1.

Claim 27 (as amended) is in independent form and recites a “method for forming a thermoformable panel” comprising, in combination with other elements, “providing a thermoplastic material for use as an adhesive between the bonding layer and the structural sheet,” “cooling the structural sheet from the extrusion temperature to a predetermined temperature,” and “joining the first exterior surface to the second exterior surface to form a thermoformable panel by using heat from the structural sheet at the predetermined temperature to activate adhesive properties of the thermoplastic material.” Claim 31 depends from independent Claim 27.

Reece et al. is directed to a “method and apparatus for forming thick wall plastic sheets having formable decorative film layers” including “providing a thick wall plastic sheet at least partially laminated with a stretchable decorative film”; “heating the laminated sheet to a suitable working temperature”; “forming the preheated laminated sheet to a desired contour and surface finish of the decorative film” (see Abstract; col. 1, lines 39-49; and Figures 17 and 18).

Roys et al. is directed to a “thick sheet laminating process for making exterior automotive body panels” including a backing sheet wherein a dry paint transfer film is laminated to a relatively the backing sheet, which is then laminated to a relatively thick thermoformable substrate sheet (see Abstract).

Belyeu is directed to “transparent kayak/canoe hull” including a “hull” 10 “unitarily formed from transparent thermoplastic sheet via vacuum forming” (see col. 4, lines 30-34).

The “method for forming a three-dimensional polymeric structure” recited in independent Claim 1 (as amended) would not have been obvious in view of Reece et al., alone or in any proper combination with Roys et al. and/or Belyeu under 35 U.S.C. § 103(a). Reece et al. alone or in any proper combination with Roys et al. and/or Belyeu does not disclose, teach or suggest a “method for forming a three-dimensional polymeric structure” comprising, in

combination with other elements, “providing a thermoplastic material for use as an adhesive between the bonding layer and the structural sheet,” “cooling the structural sheet from the extrusion temperature to a predetermined temperature,” and “joining the first exterior surface to the second exterior surface to form a thermoformable sheet by using heat from the structural sheet at the predetermined temperature to activate adhesive properties of the thermoplastic material.” To transform the extruded sheet heating process of Reece et al. and the backing sheet process of Roys et al. and/or the thermoplastic sheet hull of Belyeu into a “method for forming a three-dimensional polymeric structure” (as recited in Claim 1) would require still further modification, and such modification is taught only by Applicant’s own disclosure. The suggestion to make the combination of Reece et al., Roys et al. and/or Belyeu has been taken from Applicant’s own specification (using hindsight), which is improper.

The “method for forming a three-dimensional polymeric structure” recited in independent Claim 1 (as amended), considered as a whole, would not have been obvious in view of Reece et al., Roys et al. and/or Belyeu. The rejection of Claim 1 (as amended) over Reece et al. in view of Roys et al. and/or Belyeu under 35 U.S.C. § 103(a) is improper. Therefore, Claim 1 (as amended) is patentable over Reece et al.

Also, the “method for forming a thermoformable panel” recited in independent Claim 27 (as amended) would not have been obvious in view of Reece et al., alone or in any proper combination with any of the cited references under 35 U.S.C. § 103(a). Reece et al. alone or in any proper combination with any of the cited references does not disclose, teach or suggest a “method for forming a thermoformable panel” comprising, in combination with other elements, “providing a thermoplastic material for use as an adhesive between the bonding layer and the structural sheet,” “cooling the structural sheet from the extrusion temperature to a predetermined temperature,” and “joining the first exterior surface to the second exterior surface

to form a thermoformable panel by using heat from the structural sheet at the predetermined temperature to activate adhesive properties of the thermoplastic material.” To transform the extruded sheet heating process Reece et al. into a “method for forming a thermoformable panel” (as recited in Claim 27) would require still further modification, and such modification is taught only by Applicant’s own disclosure. The suggestion to make the modification of Reece et al. has been taken from Applicant’s own specification (using hindsight), which is improper.

The “method for forming a thermoformable panel” recited in independent Claim 27 (as amended), considered as a whole, would not have been obvious in view of Reece et al. The rejection of Claim 27 (as amended) over Reece et al. under 35 U.S.C. § 103(a) is improper. Therefore, Claim 27 (as amended) is patentable over Reece et al.

Dependent Claims 9, 10, 16-18, 22-26 and 31, which depend from independent Claim 1 (as amended) or Claim 27 (as amended), are also patentable. See 35 U.S.C. § 112 ¶ 4.

Applicant respectfully requests withdrawal of the rejection of Claims 9, 10, 16-18, 22-26 and 31 under 35 U.S.C. § 103(a).

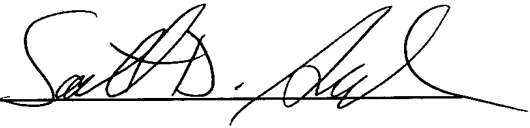
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The Applicant respectfully submits that each and every outstanding objection and rejection has been overcome, and the present Application is in a condition for allowance. The Applicant requests reconsideration and allowance of pending Claims 1-32 and 48-50.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Respectfully submitted,

Date 7/2/03

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